

## WHAT IS CLAIMED IS:

1. An incubator for premature and newborn patients with a heater and an oxygen metering device for delivering a fresh air flow into an interior space of the incubator, the incubator comprising:

5           an electrically operated oxygen concentrator; and

          an oxygen sensor for measuring oxygen concentration in the incubator, wherein the oxygen metering device meters oxygen released by said oxygen concentrator into the fresh air flow fed into the incubator.

2. An incubator according to claim 1, wherein said oxygen concentrator is a material  
10           comprising one of a pressure varying absorber based on zeolite.

3. An incubator according to claim 1, wherein said oxygen concentrator is a material comprising one of a pressure varying absorber based on a plurality of solid electrolyte cells, which bring about a local oxygen enrichment because of a potential difference applied to said solid electrolyte cells.

15           4. An incubator according to claim 1, wherein said oxygen sensor is an electrochemical measuring cell.

5. An incubator according to claim 1, further comprising a fan, wherein the fresh air flow is delivered into the incubator by said fan.

6. An incubator according to claims 5, wherein said fan is a radial compressor.

7. An incubator according to claim 1, wherein a humidifier is arranged in the fresh air flow, which is fed into the incubator introducing moisture in the incubator.

8. An incubator according to claim 1, wherein said oxygen sensor is connected to said  
5 oxygen metering device via an oxygen controller.

9. An incubator according to claim 1, wherein the heater for the fresh air flow enriched with oxygen is controlled as a function of a temperature sensing means measuring the temperature in the interior space of the incubator.

10. An incubator for premature and newborn patients, the incubator comprising:  
10 an fresh air delivering means providing a fresh gas flow to the incubator;  
an ambient air flow line;  
an electrically operated oxygen concentrator connected to said ambient air fresh gas flow line for providing an oxygen concentration gas with a higher oxygen concentration than the ambient air;  
15 a metering device for metering the oxygen concentration gas flow into the fresh gas flow;  
and  
an oxygen sensor for measuring oxygen concentration in the incubator wherein said metering device meters the oxygen concentration gas into the fresh gas flow based on the oxygen

concentration in the incubator.

11. An incubator according to claim 10 wherein said oxygen concentrator comprises a pressure varying absorber based on zeolite.

5 12. An incubator according to claim 10 wherein said oxygen concentrator comprises a plurality of stacked solid electrolyte cells, which bring about a local oxygen enrichment because of a potential difference applied to said solid electrolyte cells.

13. An incubator according to claim 10, wherein said oxygen sensor comprises an electrochemical measuring cell.

10 14. An incubator according to claim 10, wherein said fresh gas delivering means comprises a delivery line with an ambient air source and a fan connected to said delivery line, wherein the fresh gas flow is delivered into the incubator by said fan.

15. An incubator according to claim 14, wherein said fan is a radial compressor.

15 16. An incubator according to claim 10, further comprising a heater arranged in the fresh gas flow to heat the fresh gas and a humidifier arranged in the fresh gas flow to introduce moisture in the incubator.

17. An incubator according to claim 10, wherein said oxygen sensor is connected to said oxygen metering device via an oxygen controller.

18. An incubator according to claim 10, further comprising:

a heater arranged in the fresh gas flow to heat the fresh gas; and

5 a temperature sensing means measuring the temperature in the interior space of the incubator wherein the heater for the fresh gas flow enriched with oxygen is controlled as a function of a temperature measured by said temperature sensing means.

19. A method for delivering a controlled air flow to an incubator, the method comprising the steps of:

10 providing an incubator patient space;

measuring oxygen concentration in the incubator patient space;

treating a gas source to provide an oxygen concentrated gas;

measuring an oxygen concentration in the incubator; and

15 metering the concentrated oxygen gas into the incubator based on measured oxygen concentration in the incubator.

20. A method according to claim 19, further comprising the steps of:

providing a fresh gas flow into the incubator wherein said metering the concentrated oxygen gas into the incubator includes metering the concentrated oxygen gas into the fresh gas  
20 flow;

heating the fresh gas flow; and

humidify the fresh gas flow.

21. A method according to claim 20, further comprising the step of:

measuring the temperature in the incubator; and

5       controlling said step of heating to control the heat delivered into the incubator based on  
measured heat temperature in the incubator.